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EXAMINER
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ART UNIT	PAPER NUMBER
1651	

NOTIFICATION DATE	DELIVERY MODE
08/20/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/555,099	ESCOFFIER ET AL.	
	Examiner	Art Unit	
	SUSAN E. FERNANDEZ	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-23* is/are pending in the application.

4a) Of the above claim(s) *14-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/27/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The response filed March 11, 2008, has been received and entered.

Claims 13 and 24-26 are cancelled. Claims 1-12 and 14-23 are pending.

Election/Restrictions

Applicant's election with traverse of Group I, claims 1-12, and the species ((a) activated ester, (b) amine, (c) peptide, (d) oligonucleotide, and (e) cell) in the reply filed on March 11, 2008, is acknowledged. The traversal is on the ground(s) that no adequate reasons and/or examples have been provided to support a conclusion of patentable distinctiveness between the identified groups, nor has a serious burden been demonstrated. This is not found persuasive because Caillat et al. (WO 02/088300, English language equivalent US 2004/0175708) and Montgomery (US 6,280,595, listed in International Search Report) demonstrate that the claims presented for examination at the very least lack an inventive step for the reasons discussed below. Given that there is a lack of a common special technical feature which defines them over the prior art, there is patentable distinctiveness between the identified groups. Moreover, as there is patentable distinctiveness between the groups, a serious search burden has been demonstrated.

The requirement is still deemed proper and is therefore made FINAL.

Claims 14-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claims 1-12 are examined on the merits to the extent they read on the elected subject matter.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4-7 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Caillat et al. (WO 02/088300, English language equivalent US 2004/0175708).

Caillat et al. discloses a miniature device for separating and/or isolating biological objects comprising at least one first electrode, at least one second electrode, and a matrix of reaction microcuvettes wherein each comprises a receptive zone (paragraph [0023] of English equivalent). Figure 1 shows one form of the miniature device which consists of a first electrode 1 forming a reception zone 9 to which a reagent is optionally attached, and a second electrode 3 which is separated from the first electrode by an isolating material 2, along with an electrical feed circuit 103 that connects to the electrodes (paragraph [0095] of English equivalent). Clearly the reception zone 9 is the "support comprising a surface comprising an attachment zone (Z)," the first and second electrodes 1 and 3 are the "working electrode (WE) and a counterelectrode (CE)...placed on the support in the vicinity of the attachment zone," while the electrical feed circuit 103 is the "means for applying a given electric circuit or a given potential to said working electrode," as recited in instant claim 1. Thus, instant claim 1 is anticipated by the reference.

As the second electrode lies above the first electrode, instant claim 2 is taught. Claim 4 is anticipated since the electrical feed circuit provides an electric circuit or potential and since

MPEP 2114 points out that "A claim containing a 'recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus' if the prior art apparatus teaches all the structural limitations of the claim." Claim 5 is anticipated since the device may comprise at least one third electrode (paragraph [0048] in English equivalent) and as an electrode, would have been capable of measuring the potential applied to the first electrode. Claim 6 is anticipated because an electrode can be in any form (variety of sizes and shapes), thus the attachment zone is "…in the form of an electrode." Claim 7 is anticipated since Caillat et al. teaches the reception zone 9 (attachment zone) can have a reagent capable of attaching the biological object (paragraph [0052] of English equivalent) where the reagent can be conducting copolymers to which are attached proteins, peptides, or other molecules specific to the type of biological object to be attached, such as antibodies and receptors (paragraph [0054] of English equivalent). Since proteins are affected by pH, the reagent (probe) is "capable of binding, according to the pH, to the target (b) so as to attach it" as recited in instant claim 7. Therefore, claim 12 is also anticipated.

A holding of anticipation is clearly required.

Claims 1-7 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Montgomery (US 6,280,595, listed on 1/27/06 IDS).

Montgomery discloses a substrate comprising monomers, linker molecules, and pre-formed molecules, including nucleic acids, at a specific location which are proximate to an array of electrodes (column 11, lines 16-19 and column 12, lines 1-5). An electric potential is applied to selected electrodes, where preferably each electrode is individually addressable and

controllable by an electrical source (column 22, lines 12-15). Thus, a means for applying a given electric current or a give potential is present. Moreover, there can be a "getter" structure such as a second electrode proximate to the array of electrodes (column 6, lines 18-21). Since there are multiple electrodes, electrodes present may be a working electrode, a counterelectrode, or a reference electrode. Claims 1, 2, 4, 5, and 12 are anticipated even though Montgomery does not specify that when the attachment zones and the electrodes are immersed in an aqueous solution, a local variation in pH in the region of the substrate (attachment zone) occurs, or that the reference electrode is placed so as to measure the potential applied to the working electrode (claim 5). There is anticipation since MPEP 2114 points out that "A claim containing a 'recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus' if the prior art apparatus teaches all the structural limitations of the claim." Note that column 17, lines 21-27 provides further support for compounds serving as probes on the substrate, including proteins, enzymes, nucleic acids, and antibodies, as required by instant claim 12.

Instant claim 3 is anticipated since Montgomery teaches that contemplated electrode array geometries include "concentric circle grid geometries wherein the electrodes form concentric circles about a common center" (column 22, lines 19-24). Claim 6 is anticipated because an electrode can be in any form (variety of sizes and shapes), thus the attachment zone is "…in the form of an electrode." Finally, claim 7 is anticipated since the molecules on the substrate (attachment zone) may be proteins, and proteins are known to be affected by pH.

A holding of anticipation is clearly required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caillat et al. in view of Montgomery and Segev (US 5,843,650).

As discussed above, Caillat et al. anticipates claims 1, 2, 4-7 and 12. However, Caillat et al. does not expressly disclose that the working electrode, the counterelectrode, and the attachment zone are in an interdigitated comb design, a spiral design, or a concentric design.

Montgomery discloses a substrate having one or more molecules bearing at least one protected chemical functional group bonded thereto proximate to an array of electrodes (column 12, lines 1-5). A monomer solution comprising molecules such as proteins, nucleic acids, polysaccharides, and porphyrins is contacted with the substrate surface such that these molecules

bond with the chemical functional groups on the substrate surface (column 12, lines 11-15). Montgomery teaches that contemplated electrode array geometries include "concentric circle grid geometries wherein the electrodes form concentric circles about a common center" (column 22, lines 19-24).

At the time the invention was made, it would have been obvious to the person of ordinary skill in the art to have modified the electrode design of the Caillat invention such that the electrode is present in concentric circle grid geometries. One of ordinary skill in the art would have been motivated to do this since electrode in a concentric circle grid geometry is shown to be suitable for an electrode array that localized by an attachment area, as demonstrated in Montgomery. Further still, the arrangement of the electrodes relative to the attachment area of the Caillat invention would have been a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular arrangement was significant. Thus other arrangements are obvious.

Caillat et al. also differs from the claimed invention in that it does not specifically disclose that the reagent attached to the reception zone 9 (the probe) is capable of binding to the biological object being isolated (the target) so as to attach it by an electrophilic or nucleophilic group, such as an activated ester, or an amine, or that the reagent (the probe) is chosen so that it can form with the biological object a peptide bond.

Segev discloses a method and kit for detecting a target nucleic acid sequence which may be present in a test sample (column 5, lines 48-50). A pair of oligonucleotide probes is used, wherein one member of the pair has a nucleophilic chemical functionality group and the other pair has an electrophilic chemical functionality group (column 23, lines 46-50). The target

molecule bonds with the oligonucleotide probes by chemical functionality groups (column 26, lines 20-24).

At the time the invention was made, it would have been obvious to the person of ordinary skill in the art to have use probes such as the oligonucleotide probes of Segev as the reagent attached to the receptive zone of the Caillat invention. One of ordinary skill in the art would have been motivated to do this since such oligonucleotide probes are suitable for the isolation of a nucleic acid sequence by the formation of a complex of the oligonucleotide probes and the sequence. Therefore, the reagent found in the receptive zone in the Caillat invention is a probe capable of binding to the target so as to attach it by an electrophilic or nucleophilic group. It would have been obvious to have used activated ester or amine as the chemical functionality group of the probes as they are known electrophilic/nucleophilic groups. Moreover, because of the different chemical funcitionality groups that may be used as oligonucleotide probes, it would have been obvious that different bonds, including peptide bonds, would have formed between the biological object (oligonucleotide) being isolated and the oligonucleotide probes used as the reagent of the Caillat invention. Thus, a holding of obviousness is clearly required.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montgomery in view of Segev.

As discussed above, Montgomery anticipates claims 1-7 and 12. However, Montgomery does not expressly disclose that the one or more molecules bearing at least one protected chemical functional group on the substrate are capable of binding to the monomers or pre-formed molecules so as to attach them by an electrophilic or nucleophilic group, such as an activated

ester, or an amine, or that the one or more molecules on the substrate are chosen so that they can form with the monomers or pre-formed molecules a peptide bond.

Segev discloses a method and kit for detecting a target nucleic acid sequence which may be present in a test sample (column 5, lines 48-50). A pair of oligonucleotide probes is used, wherein one member of the pair has a nucleophilic chemical functionality group and the other pair has an electrophilic chemical functionality group (column 23, lines 46-50). The target molecule bonds with the oligonucleotide probes by chemical functionality groups (column 26, lines 20-24).

At the time the invention was made, it would have been obvious to the person of ordinary skill in the art to have used probes such as the oligonucleotide probes of Segev as the one or more molecules bearing at least one protected chemical functional group on the substrate of the Montgomery invention. One of ordinary skill in the art would have been motivated to do this since such oligonucleotide probes are suitable for the binding with nucleic acids, which are amongst the monomers or pre-formed molecules recited in Montgomery. Therefore, the one or more molecules bearing at least one protected chemical functional group on the substrate are capable of binding to the monomers or pre-formed molecules (when they are nucleic acids) so as to attach them by an electrophilic or nucleophilic group. It would have been obvious to have used activated ester or amine as the chemical functionality group of the one or more molecules on the substrate as they are known electrophilic/nucleophilic groups. Moreover, because of the different chemical funcitionality groups that may be used as oligonucleotide probes, it would have been obvious that different bonds, including peptide bonds, would have formed between the monomers or pre-formed molecules (nucleic acids) and the oligonucleotide probes used as the

one or more molecules on the substrate of the Montgomery invention. Thus, a holding of obviousness is clearly required.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN E. FERNANDEZ whose telephone number is (571)272-3444. The examiner can normally be reached on Mon-Fri 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon B Lankford/
Primary Examiner, Art Unit 1651

Susan E. Fernandez
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sef